Course guide
820328 - RSE - Energy Sector Regulation

Last modified: 26/06/2025

Unit in charge: Barcelona East School of Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.

Degree: BACHELOR'S DEGREE IN ENERGY ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: JORGE DE LA HOZ CASAS

Others: Primer quadrimestre:
JORGE DE LA HOZ CASAS - Grup: M11, Grup: M12

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CEENE-16. Formulate energy balances and identify losses.

CEENE-01. Knowledge of energy supply procurement systems.

Transversal:
1. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

TEACHING METHODOLOGY

The teaching methodology used is a mixed methodology based on the application of PBL methodology together with a theoretical introduction. This structure allows students to contextualize the work to be developed.

LEARNING OBJECTIVES OF THE SUBJECT

The aim of the subject is to provide the basic knowledge of how the Spanish energy sectors are structured and managed, as well as a perspective on the regulatory framework for major activities of the various energy sectors.

STUDY LOAD

Type	Hours	Percentage
Hours large group	30,0	20.00
Hours medium group	30,0	20.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

(ENG) Introduction to Electricity Sector

Description:
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Specific objectives:
Energy targets
Sector structure
Economic framework
Administrative control

Full-or-part-time: 4h
Theory classes: 4h

(ENG) Power generation I

Description:
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Specific objectives:
Power generation as liberalized activity
SES operation and economic mechanisms
Power generation characteristics and economic consequences

Full-or-part-time: 4h
Theory classes: 4h

(ENG) Power generation II

Description:
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Specific objectives:
Renewable energy policies and applied legal frameworks
Control deficiencies and renewable energy promotion
Renewable energy and retroactivity
New renewable energy legal framework

Full-or-part-time: 4h
Theory classes: 4h

(ENG) Regulated activities

Description:
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Specific objectives:
Legal framework and objectives
Transmission and distribution activities
The system operator
The operator and the technical management

Full-or-part-time: 4h
Theory classes: 4h

(ENG) Electricity markets

Description:
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Specific objectives:
Legal framework and objectives
Whole sale market
Retail market

Full-or-part-time: 4h
Theory classes: 4h

(ENG) Introduction to the Natural Gas Sector

Description:
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Specific objectives:
Legal framework
Infrastructure and management of the system
The regulatory body
Economic framework

Full-or-part-time: 4h
Theory classes: 4h

PBL_I

Description:
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Full-or-part-time: 60h
Laboratory classes: 15h
Self study : 45h

PB_II

Description:
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Full-or-part-time: 60h
Laboratory classes: 15h
Self study : 45h

Tests intended for the classroom

Description:
These hours are intended to perform the various tests of continuous assessment associated with the contents of the course.

Full-or-part-time: 6h
Theory classes: 6h

GRADING SYSTEM

During the course, students will progressively go deeper into the main concepts of energy sector regulation (ERS) through a series of theory sessions and problems. In some cases, the issues defined want to mimic the main cases found when projects related to ERS are executed. These problems will be called Transversal Problems (Pb_T) and Specific Problems (Pb_S).

The evaluation will be carried out using different tests related to the contents and problems developed in the subject. Although the defined problems can be developed in groups (a maximum of four people are recommended), the tests or exams will be carried out individually.

The Pb_T group will be worth 40% of the final grade. This will include all the concepts developed in resolving the main problems associated with the market study and implementation of a power plant and its economic feasibility study.

The evaluation of the Pb_T block will be carried out through two exams, which will be associated with the contents of the market and implementation study (with a weight of 20%) and the economic feasibility study (with a weight of 20%).

The Pb_E block will be worth 50% of the final grade. This will include all the concepts developed in the resolution of the main problems associated with the regulatory frameworks of renewable energies (RE) and their impact on economic viability, the commercialization and billing of the energy supply, as well as the integration of the main conceptual elements explained in the course.

The evaluation of the Pb_E block will be carried out through two or three exams, which will be associated with the contents of the RE regulatory frameworks (with a weight of 20%), with the commercialization and billing of the energy supply (with a weight of 20%) and with conceptual integration (with a weight of 10%). In some cases, these last two exams may be carried out jointly. If this were the case, this joint examination would weigh 30%.

Finally, remember that within the subject, the generic competence designated by the School will be developed and that this will have a percentage weight of 10% concerning the total of the final grade.

BIBLIOGRAPHY

Basic:
- Pérez-Arriaga, Ignacio J. Regulation of the Power Sector [on line]. 2a. London: Springer London, 2013 [Consultation: 11/06/2020]. Available on: http://dx.doi.org/10.1007/978-1-4471-5034-3. ISBN 9781447150343.